THEORY OF DYNAMIC PLANNING OF FARM PRODUCTION

BY

RICHARD CHIEN-WEN KAO

B. S., University of Illinois, 1949
M. S., University of Illinois, 1950

AN ABSTRACT OF A THESIS

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF DOCTOR OF PHILOSOPHY IN AGRICULTURAL ECONOMICS
IN THE GRADUATE COLLEGE OF THE
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Introduction

There are in general two levels of research: the routine fact-finding study and the explorative methodological inquiry. The former provides the basic information necessary to build up the content of a science whereas the latter assures that the techniques used in providing such information are brought up to date. One without the other is grossly inadequate to keep any science growing *pari passu* with a changing world. The present research is primarily one of the second type as relating to the field of production economics.

The research undertaken comprises three phases:

1. research methodology,
2. history of the theory of production, and
3. theory of dynamic planning of farm production.

The first two provide respectively the logical and the historical background for the third. The work is one of analysis and synthesis rather than that of description, and as such must needs remain critical and at times laborious.

Research Methodology

Analytical consideration of research methodology is taken in three steps: (a) scientific research, (b) social sciences, and (c) production economics. The nature and significance of scientific research is presented and elucidated from the standpoint of the theory of knowledge. Three desiderata of science are noted, namely, progress, theory and operation. The unity of the social sciences is then discussed upon such basis. And methodological difficulties are accordingly classified into two classes, those dealing with their contents and those dealing with their methods. The study is made with constant reference to the Unity of Science Movement, a significant cultural movement within the realm of science during the past two decades which is ever gaining momentum. Lastly, reseach methods in the field of production economics are reviewed and scrutinized on logical grounds afforded by the first two steps. It is noted that two issues are not usually kept distinct, logic versus value, with the consequence that divergence of opinions not infrequently turns into polemics. However, caution is taken to make note of the rugged terrain over which every science has to travel and of the seemingly disharmonious hallmark of research in production economics which in fact involves no real breach of continuity in the course of its development.

History Of The Theory Of Production

Synthetic inquiry into the theory of production is undertaken in two steps: (a) the classical framework, and (b) recent developments. The former is built upon the Ricardian system, and a new interpretation of that system is offered on the basis of textural evidence. The latter is amassed from four currents of thought streching over a period of almost half a century, and their convergence into a coherent body of theory, "linear programming," is indicated with extensive bibliographical references.

Theory Of Dynamic Planning Of Farm Production

A theory of dynamic planning of farm production is developed and extended from recent developments in the field of "activity analysis." The technique combines successfully theoretical simplicity and practical flexibility. Traditional rules of thumb used in the analysis of farm production problems are replaced and formalized by precise and rigorous scientific procedures which yield "efficient" solutions within the framework of both economic and technical requirements. The theory is then applied to the problem of developing an efficient feeding program and that of planning an efficient working schedule. The computational procedure is also shown in the technical appendix.

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VITA

Richard Chien-Wen Kao was born on February 6, 1929, in Shanghai, China. He received his early education from the Shanghai Municipal Council Primary School and St. John's Y. M. C. A. Junior Middle School from which he was graduated with the highest honor and was bestowed the only scholarship award to study at the St. John's Senior Middle School. After having attended that school about a year and half, conditions in Shanghai became rather uncertain whereupon he temporarily continued his education at home under the instruction of four private tutors. Theretofore, he had also attended the evening school of Deutches Lektorat. In 1944, he entered the Soochow Middle School and was graduated a year and half later with the highest honor and another sole scholarship award to study at the Soochow University. However, he had at that time fortunately met Professor H. C. M. Case, then with the Sino-American Agriculture Collaboration Mission, in Nanking, who was kind enough to help him obtain an admission to the University of Illinois.

In September, 1946, he came to the United States and enrolled as a freshman in the College of Agriculture at the University of Illinois. In February, 1949, he graduated from that College in the curriculum of Agricultural Science and was awarded the highest honor and also an inscription upon the Bronze Tablet. He has since continued studying as an Agricultural Economics major in the Graduate School of the University of Illinois and has held a first-year scholarship, a second year fellowship and a third-year fellowship which was given one semester's extension.

He is a member of Phi Eta Sigma, Phi Kappa Phi, Gamma Sigma Delta and Pi Mu Epsilon.